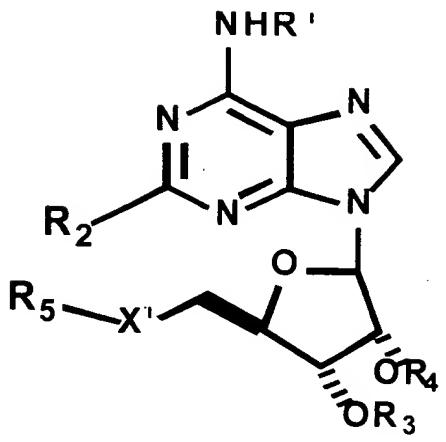
What we claim is:

1. A composition of matter having the formula:



wherein X^1= S, S(O), $S(O)_2$;

R^1 is a monocyclic or polycyclic heterocyclic group containing from 3 to 15 carbon atoms wherein at least one carbon atom is substituted with an atom or molecule selected from the group consisting of N, O, P and S-$(O)_{0-2}$ wherein R_1 does not contain an epoxide group;

R_2 is selected from the group consisting of hydrogen, halo, CF_3, and cyano;

R_3 and R_4 are each independently selected from the group consisting of hydrogen, –(CO)-R', and –(CO)-R" wherein R' and R'' are each independently selected from the group consisting of C_{1-15} alkyl, C_{2-15} alkenyl, C_{2-15} alkynyl, heterocyclyl, aryl, and heteroaryl, which alkyl, alkenyl, alkynyl, aryl, heterocyclyl, and heteroaryl are optionally substituted with from 1 to 3 substituents independently selected from the group of halo, NO_2, heterocyclyl, aryl, heteroaryl, CF_3, CN, OR^{20}, SR^{20}, $S(O)R^{22}$, SO_2R^{22}, $SO_2N(R^{20})_2$, $SO_2NR^{20}COR^{22}$, $SO_2NR^{20}CO_2R^{22}$, $SO_2NR^{20}CON(R^{20})_2$, $N(R^{20})_2$, $NR^{20}COR^{22}$, $NR^{20}CO_2R^{22}$, $NR^{20}CON(R^{20})_2$, $NR^{20}C(NR^{20})NHR^{23}$, COR^{20}, CO_2R^{20}, $CON(R^{20})_2$, $CONR^{20}SO_2R^{22}$, $NR^{20}SO_2R^{22}$, $SO_2NR^{20}CO_2R^{22}$, $OCONR^{20}SO_2R^{22}$, $OC(O)R^{20}$, $C(O)OCH_2OC(O)R^{20}$, and $OCON(R^{20})_2$ and wherein each optional heteroaryl, aryl, and heterocyclyl substituent is further optionally substituted with halo, NO_2, alkyl, CF_3, amino, mono- or di- alkylamino, alkyl or aryl or heteroaryl amide, $NR^{20}COR^{22}$, $NR^{20}SO_2R^{22}$, COR^{20}, CO_2R^{20}, $CON(R^{20})_2$, $NR^{20}CON(R^{20})_2$,

$OC(O)R^{20}$, $OC(O)N(R^{20})_2$, SR^{20}, $S(O)R^{22}$, SO_2R^{22}, $SO_2N(R^{20})_2$, CN, or OR^{20};

R_5 is selected from the group consisting of C_{1-15} alkyl, C_{2-15} alkenyl, C_{2-15} alkynyl, heterocyclyl, aryl, and heteroaryl, wherein each alkyl, alkenyl, alkynyl, aryl, heterocyclyl, and heteroaryl are optionally substituted with from 1 to 3 substituents independently selected from the group consisting of halo, alkyl, NO_2, heterocyclyl, aryl, heteroaryl, CF_3, CN, OR^{20}, SR^{20}, $S(O)_3R^{20}$, $S(O)R^{22}$, SO_2R^{22}, $SO_2N(R^{20})_2$, $SO_2NR^{20}COR^{22}$, $SO_2NR^{20}CO_2R^{22}$, $SO_2NR^{20}CON(R^{20})_2$, $P(O)(OR^{20})_2$, $N(R^{20})_2$, $NR^{20}COR^{22}$, $NR^{20}CO_2R^{22}$, $NR^{20}CON(R^{20})_2$, $NR^{20}C(NR^{20})NHR^{23}$, COR^{20}, CO_2R^{20}, $CON(R^{20})_2$, $CONR^{20}SO_2R^{22}$, $NR^{20}SO_2R^{22}$, $SO_2NR^{20}CO_2R^{22}$, $OCONR^{20}SO_2R^{22}$, $OC(O)R^{20}$, $C(O)OCH_2OC(O)R^{20}$, and $OCON(R^{20})_2$ and wherein the optional heteroaryl, aryl, and heterocyclyl substituent are each further optionally substituted with halo, NO_2, alkyl, CF_3, amino, mono- or di- alkylamino, alkyl or aryl or heteroaryl amide. $NR^{20}COR^{22}$, $NR^{20}SO_2R^{22}$, COR^{20}, CO_2R^{20}, $CON(R^{20})_2$, $NR^{20}CON(R^{20})_2$, $OC(O)R^{20}$, $OC(O)N(R^{20})_2$, SR^{20}, $S(O)R^{22}$, SO_2R^{22}, $SO_2N(R^{20})_2$, CN, or OR^{20};

R^{20} is selected from the group consisting of H, C_{1-15} alkyl, C_{2-15} alkenyl, C_{2-15} alkynyl, heterocyclyl, aryl, and heteroaryl, which alkyl, alkenyl, alkynyl, heterocyclyl, aryl, and heteroaryl are optionally substituted with from 1 to 3 substituents independently selected from halo, alkyl, mono- or dialkylamino, alkyl or aryl or heteroaryl amide, CN, O-C_{1-6} alkyl, CF_3, aryl, and heteroaryl; and

R^{22} is selected from the group consisting of C_{1-15} alkyl, C_{2-15} alkenyl, C_{2-15} alkynyl, heterocyclyl, aryl, and heteroaryl, which alkyl, alkenyl, alkynyl, heterocyclyl, aryl, and heteroaryl are optionally substituted with from 1 to 3 substituents independently selected from halo, alkyl, mono- or dialkylamino, alkyl or aryl or heteroaryl amide, CN, O-C_{1-6} alkyl, CF_3, and heteroaryl.

2. The composition of claim 1 wherein R_2 is selected from the group consisting of hydrogen, and halo;

R_3 and R_4 are each independently selected from the group consisting of hydrogen, –(CO)-R', and –(CO)-R" wherein R' and R" are each independently selected from the group consisting of C_{1-15} alkyl, heterocyclyl, aryl, and heteroaryl, which alkyl, aryl, heterocyclyl, and heteroaryl are each optionally substituted with from 1 to 2 substituents independently selected from the group of halo, NO_2, heterocyclyl, aryl, heteroaryl, CF_3, CN, OR^{20}, $S(O)R^{22}$, SO_2R^{22},

$SO_2N(R^{20})_2$, $N(R^{20})_2$, $NR^{20}COR^{22}$, $NR^{20}CO_2R^{22}$, $NR^{20}CON(R^{20})_2$, $NR^{20}C(NR^{20})NHR^{23}$, COR^{20}, CO_2R^{20}, $CON(R^{20})_2$, $CONR^{20}SO_2R^{22}$, $NR^{20}SO_2R^{22}$ and wherein each optional heteroaryl, aryl, and heterocyclyl substituent is further optionally substituted with halo, NO_2, alkyl, CF_3, amino, mono- or di- alkylamino, CN, or OR^{20};

R_5 is selected from the group consisting of C_{1-15} alkyl, C_{2-15} alkenyl, C_{2-15} alkynyl, heterocyclyl, aryl, and heteroaryl, wherein alkyl, alkenyl, alkynyl, aryl, heterocyclyl, and heteroaryl are optionally substituted with from 1 to 3 substituents independently selected from the group of halo, alkyl, heterocyclyl, aryl, heteroaryl, CF_3, CN, OR^{20}, SR^{20}, $N(R^{20})_2$, $S(O)R^{22}$, $S(O)_3R^{20}$, SO_2R^{22}, $SO_2N(R^{20})_2$, $NR^{20}CO_2R^{22}$, $NR^{20}CON(R^{20})_2$, COR^{20}, CO_2R^{20}, $CON(R^{20})_2$, and wherein each optional heteroaryl, and aryl substituent is optionally substituted with halo, alkyl, CF_3, CO_2R^{20}, $CON(R^{20})_2$, $NR^{20}CON(R^{20})_2$, SR^{20}, $S(O)R^{22}$, SO_2R^{22}, $SO_2N(R^{20})_2$, CN, or OR^{20};

R^{20} is selected from the group consisting of H, C_{1-15} alkyl, aryl, and heteroaryl, which alkyl, aryl, and heteroaryl are each optionally substituted with from 1 to 2 substituents independently selected from halo, alkyl, mono- or dialkylamino, CN, O-C_{1-6} alkyl, CF_3; and

R^{22} is selected from the group consisting of C_{1-15} alkyl, aryl, and heteroaryl, which alkyl, aryl, and heteroaryl are each optionally substituted with from 1 to 2 substituents independently selected from halo, alkyl, mono- or dialkylamino, alkyl or CN, O-C_{1-6} alkyl, and CF_3.

3. The composition of claim 1 wherein R_2 is a hydrogen;

R_3 and R_4 are each independently selected from the group consisting of hydrogen, –(CO)-R' and –(CO)-R" wherein R' and R'' are each independently selected from the group consisting of C_{1-10} alkyl, aryl, and heteroaryl, which alkyl, aryl, and heteroaryl are optionally substituted with from 1 to 2 substituents independently selected from the group of halo, NO_2, aryl, heteroaryl, CF_3, CN, OR^{20}, $N(R^{20})_2$, $S(O)R^{22}$, SO_2R^{22}, $NR^{20}COR^{22}$, COR^{20}, CO_2R^{20}, $CON(R^{20})_2$, $NR^{20}SO_2R^{22}$, and wherein each optional heteroaryl, aryl, and heterocyclyl substituent is further optionally substituted with halo, NO_2, alkyl, CF_3;

R_5 is selected from the group consisting of C_{1-15} alkyl, C_{2-15} alkenyl, heterocyclyl, aryl, and heteroaryl, wherein each alkyl, alkenyl, aryl, heterocyclyl, and heteroaryl are optionally substituted with from 1 to 3 substituents independently selected from the group consisting of

halo, alkyl, aryl, heteroaryl, CF_3, CN, OR^{20}, SR^{20}, $N(R^{20})_2$, $S(O)R^{22}$, SO_2R^{22}, $SO_2N(R^{20})_2$, $NR^{20}CO_2R^{22}$, $NR^{20}CON(R^{20})_2$, COR^{20}, CO_2R^{20}, $CON(R^{20})_2$, and wherein each optional heteroaryl, and aryl substituent is further optionally substituted with halo, alkyl, CF_3, CO_2R^{20}, $CON(R^{20})_2$, $NR^{20}CON(R^{20})_2$, $S(O)R^{22}$, SO_2R^{22}, $SO_2N(R^{20})_2$, CN, and OR^{20};

R^{20} is selected from the group consisting of H, C_{1-6} alkyl, and aryl, which alkyl, and aryl, are optionally substituted with 1 substituent selected from halo, alkyl, mono- or dialkylamino, CN, O-C_{1-6} alkyl, CF_3; and

R^{22} is selected from the group consisting of C_{1-6} alkyl and aryl, which alkyl and aryl are optionally substituted with 1 substituent independently selected from halo, alkyl, mono- or dialkylamino, alkyl or CN, O-C_{1-6} alkyl, and CF_3.

4. The composition of claim 1 wherein R_2 is a hydrogen:

R_3 and R_4 are each independently selected from the group consisting of hydrogen, –(CO)-R' and –(CO)-R" wherein R' and R'' are each independently selected from the group consisting of C_{1-6} alkyl, and aryl, which alkyl and aryl are optionally substituted with from 1 to 2 substituents independently selected from the group of halo, NO_2, aryl, CF_3, CN, OR^{20}, $N(R^{20})_2$, $S(O)R^{22}$, SO_2R^{22}, $N(R^{20})_2$, and wherein each optional aryl substituent is optionally substituted with halo, NO_2, alkyl, CF_3;

R_5 is selected from the group consisting of C_{1-15} alkyl, C_{2-15} alkenyl, aryl, and heteroaryl, wherein alkyl, alkenyl, aryl, and heteroaryl are optionally substituted with from 1 to 3 substituents independently selected from the group consisting of halo, alkyl, aryl, heteroaryl, CF_3, CN, OR^{20}, SR^{20}, $N(R^{20})_2$, $S(O)R^{22}$, SO_2R^{22}, $SO_2N(R^{20})_2$, $NR^{20}CO_2R^{22}$, $NR^{20}CON(R^{20})_2$, CO_2R^{20}, $CON(R^{20})_2$, and wherein each optional heteroaryl, and aryl substituent is further optionally substituted with halo, alkyl, CF_3, CO_2R^{20}, $CON(R^{20})_2$, $S(O)R^{22}$, SO_2R^{22}, $SO_2N(R^{20})_2$, CN, or OR^{20};

R^{20} is selected from the group consisting of H, C_{1-6} alkyl, and aryl, which alkyl and aryl are optionally substituted with 1 substituent selected from halo, alkyl, mono- or dialkylamino, CN, O-C_{1-6} alkyl, CF_3; and

R^{22} is selected from the group consisting of C_{1-6} alkyl and aryl, which alkyl and aryl are optionally substituted with 1 substituent selected from halo, alkyl or CN, O-C_{1-6} alkyl, and CF_3.

5. The composition of claim 1 wherein R_2 is a hydrogen;

R_3 and R_4 are each independently selected from the group consisting of hydrogen, –(CO)-R' and –(CO)-R'' wherein each R' and R'' are independently selected from the group consisting of C_{1-6} alkyl which alkyl are optionally substituted with 1 substituent selected from the group of aryl, CF_3, CN, OR^{20}, $N(R^{20})_2$, and wherein each optional aryl substituent is further optionally substituted with halo, NO_2, alkyl, CF_3;

R_5 is selected from the group consisting of C_{1-8} alkyl, C_{2-8} alkenyl, and aryl wherein alkyl, alkenyl, and aryl are optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, alkyl, aryl, heteroaryl, CF_3, CN, OR^{20}, $S(O)R^{22}$, SO_2R^{22}, $SO_2N(R^{20})_2$, $NR^{20}CON(R^{20})_2$, CO_2R^{20}, $CON(R^{20})_2$, and wherein each optional heteroaryl, and aryl substituent is further optionally substituted with halo, alkyl, CF_3, CO_2R^{20}, CN, and OR^{20};

R^{20} is selected from the group consisting of H, C_{1-6} alkyl; and

R^{22} is selected from the group consisting of C_{1-6}.

6. The composition of claim 1 wherein X^1=S or SO_2;

R_2 is a hydrogen;

R_3 and R_4 are each independently selected from the group consisting of hydrogen, –(CO)-R' and –(CO)-R'' wherein R' and R'' are each independently selected from the group consisting of C_{1-6} alkyl;

R_5 is selected from the group consisting of C_{1-8} alkyl, and aryl wherein alkyl, and aryl are optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, alkyl, aryl, heteroaryl, CF_3, CN, OR^{20}, $S(O)R^{22}$, SO_2R^{22}, $SO_2N(R^{20})_2$, $NR^{20}CON(R^{20})_2$, CO_2R^{20}, $CON(R^{20})_2$, and wherein each optional heteroaryl, and aryl substituent is further optionally substituted with halo, alkyl, CF_3, CO_2R^{20}, CN, and OR^{20};

R^{20} is selected from the group consisting of H, C_{1-6} alkyl; and

R^{22} is selected from the group consisting of C_{1-6}.

7. The composition of claim 1 wherein X^1=S or SO_2;

R_2 is a hydrogen;

R_3 and R_4 are hydrogen;

R_5 is selected from the group consisting of C_{1-8} alkyl, and aryl wherein alkyl, and aryl

are optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, alkyl, CF_3, CN, OR^{20}, CO_2R^{20}; and

R^{20} is selected from the group consisting of H, C_{1-6} alkyl.

8. The composition of claim 1 wherein X^1=S or SO_2;

R_2 is a hydrogen;

R_3 and R_4 are hydrogen;

R_5 is selected from the group consisting of C_{1-8} alkyl, and aryl wherein alkyl, and aryl are optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, alkyl, CF_3, OR^{20}; and

R^{20} is selected from the group consisting of H, C_{1-6} alkyl.

9. The composition of claim 1 wherein X^1=S or SO_2;

R_2 is a hydrogen;

R_3 and R^4 are independently selected from the group consisting of hydrogen. –(CO)-R' and –(CO)-R'' wherein R' and R'' are each independently selected from the group consisting of C_{1-6} alkyl which alkyl are optionally substituted with 1 substituent selected from the group consisting of aryl, CF_3, CN, OR^{20}, $N(R^{20})_2$, and wherein each optional aryl substituent is further optionally substituted with halo, NO_2, alkyl, CF_3;

R_5 is C_{1-8} alkyl, wherein alkyl, is optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, alkyl, aryl, heteroaryl, CF_3, CN, OR^{20}, $S(O)R^{22}$, SO_2R^{22}, $SO_2N(R^{20})_2$, $NR^{20}CON(R^{20})_2$, CO_2R^{20}, $CON(R^{20})_2$, wherein each optional heteroaryl, and aryl substituent is further optionally substituted with halo, alkyl, CF_3, CO_2R^{20}, CN, and OR^{20};

R^{20} is selected from the group consisting of H, C_{1-6} alkyl; and

R^{22} is selected from the group consisting of C_{1-6}.

10. The composition of claim 1 wherein X^1=S or SO_2;

R_2 is a hydrogen;

R_3 and R_4 are independently selected from the group consisting of hydrogen. –(CO)-R' and –(CO)-R'' wherein R' and R'' are each independently selected from the group consisting of C_{1-6} alkyl:

R_5 is C_{1-8} alkyl that is optionally substituted with from 1 to 2 substituents

independently selected from the group consisting of aryl, heteroaryl, OR^{20}, $S(O)R^{22}$, CO_2R^{20}, $CON(R^{20})_2$, and wherein each optional heteroaryl, and aryl substituent is further optionally substituted with halo, alkyl, CF_3, CO_2R^{20}, CN, and OR^{20};

R^{20} is selected from the group consisting of H, C_{1-3} alkyl; and

R^{22} is selected from the group consisting of C_{1-6}.

11. The composition of claim 1 wherein =S or SO_2;

R_2 is a hydrogen;

R_3 and R_4 are hydrogen;

R_5 is C_{1-8} alkyl that is optionally substituted with 1 substituent selected from the group consisting of CO_2R^{20}, and $CON(R^{20})_2$; and

R^{20} is selected from the group consisting of H, and methyl.

12. The composition of claim 11 wherein R_5 is C_{1-6} alkyl.

13. The composition of claim 11 wherein R_5 is selected from the group consisting of methyl and ethyl and isopropyl.

14. The composition of claim 1 wherein R_2 is a hydrogen;

R_3 and R_4 are each independently selected from the group consisting of hydrogen, –(CO)-R' and –(CO)-R'' wherein each R' and R'' are independently selected from the group consisting of C_{1-6} alkyl, and aryl, which alkyl and aryl are optionally substituted with from 1 to 2 substituents independently selected from the group of halo, NO_2, aryl, CF_3, CN, OR^{20}, $N(R^{20})_2$, $S(O)R^{22}$, SO_2R^{22}, $N(R^{20})_2$, and wherein each optional aryl substituent is further optionally substituted with halo, NO_2, alkyl, CF_3;

R_5 is selected from the group consisting of, aryl, and heteroaryl, wherein aryl, and heteroaryl are optionally substituted with from 1 to 3 substituents independently selected from the group consisting of halo, alkyl, aryl, heteroaryl, CF_3, CN, OR^{20}, SR^{20}, $N(R^{20})_2$, $S(O)R^{22}$, SO_2R^{22}, $SO_2N(R^{20})_2$, $NR^{20}CO_2R^{22}$, $NR^{20}CON(R^{20})_2$, CO_2R^{20}, $CON(R^{20})_2$, and wherein each optional heteroaryl, and aryl substituent is further optionally substituted with halo, alkyl, CF_3, CO_2R^{20}, $CON(R^{20})_2$, $S(O)R^{22}$, SO_2R^{22}, $SO_2N(R^{20})_2$, CN, or OR^{20};

R^{20} is selected from the group consisting of H, C_{1-6} alkyl, and aryl, which alkyl and aryl are optionally substituted with 1 substituent selected from halo, alkyl, mono- or dialkylamino, CN, O-C_{1-6} alkyl, CF_3; and

R^{22} is selected from the group consisting of C_{1-6} alkyl and aryl, which alkyl and aryl are optionally substituted with 1 substituent selected from halo, alkyl or CN, O-C_{1-6} alkyl, and CF_3.

15. The composition of claim 1 wherein X^1=S;

R_2 is a hydrogen;

R_3 and R_4 are each independently selected from the group consisting of hydrogen, –(CO)-R' and –(CO)-R'' wherein R' and R'' are each independently selected from the group consisting of C_{1-6} alkyl;

R_5 is selected from the group consisting of, aryl, and heteroaryl, wherein aryl, and heteroaryl are optionally substituted with from 1 to 3 substituents independently selected from the group consisting of halo, alkyl, CF_3, CN, OR^{20}, SR^{20}, CO_2R^{20}, $CON(R^{20})_2$; and

R^{20} is selected from the group consisting of H, C_{1-3} alkyl.

16. The composition of claim 1 wherein X^1=S;

R_2 is a hydrogen;

R_3 and R_4 are hydrogen;

R_5 is aryl that is optionally substituted with from 1 to 2 substituents independently selected from the group consisting of halo, alkyl, CF_3, OR^{20}, CO_2R^{20}, $CON(R^{20})_2$;

R^{20} is selected from the group consisting of H, and methyl; and

R^{22} is selected from the group consisting of C_{1-6} alkyl.

17. The composition of claim 16 wherein R_5 is phenyl that is optionally substituted with a substituent selected from the group consisting of methoxy, chloro, fluoro, methyl, and trifluoromethyl.

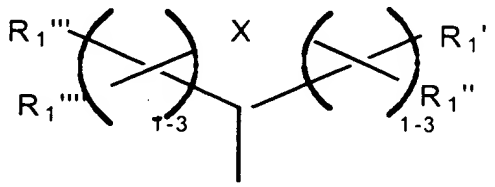
18. The composition of claim 1 wherein R^1 is mono or polysubstituted with one or more compounds selected from the group consisting of halogen, oxo, hydroxyl, lower alkyl, substituted lower alkyl, alkoxy, aryl, acyl, aryloxy, carboxyl, substituted aryl, heterocycle, heteroaryl, substituted heteroaryl, cycloalkyl, substituted cycloalkyl, nitro, cyano and mixtures thereof.

19. The composition of matter of claim 1 wherein R^1 is a monocyclic, bicyclic, or tricyclic cycloalkyl group containing from 3 to 15 carbon atoms wherein at least one carbon atom is substituted with an atom or molecule selected from the group consisting of 0 or S-

$(O)_{0-2}$.

20. The composition of claim 19 wherein R^1 is mono or polysubstituted with one or more compounds selected from the group consisting of halogen, oxo, hydroxyl, lower alkyl, substituted lower alkyl, alkoxy, aryl, acyl, aryloxy, carboxyl, substituted aryl, heterocycle, heteroaryl, substituted heteroaryl, cycloalkyl, substituted cycloalkyl, nitro, cyano and mixtures thereof.

21. The composition of claim 1 wherein R^1 is:



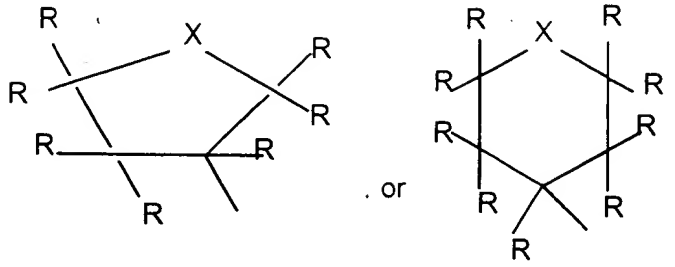
wherein R_1`, R_1``, R_1```, and R_1`````` are each independently selected from the group halogen, hydroxyl, lower alkyl, substituted lower alkyl, alkoxy, aryl, acyl, aryloxy, carboxyl, substituted aryl, heterocycle, heteroaryl, substituted heteroaryl, cycloalkyl, substituted cycloalkyl, nitro, cyano and mixtures thereof and X is O, or S $(-O)_{0-2}$.

22. The composition of claim 21 wherein R_1``` and R_1`````` can together be a single oxygen atom.

23. The composition of claim 21 wherein R_1`, R_1``, R_1```, and R_1`````` are each individually selected from the group H, lower alkyl, substitute lower alkyl, alkoxy, aryl, and substituted aryl.

24. The composition of claim 21 wherein R_1`, R_1``, R_1```, and R_1`````` are each individually selected from the group H, lower alkyl, and substitute lower alkyl.

25. The composition of claim 1 wherein R^1 is selected from the group consisting of:



wherein each R may be independently selected from the group consisting of H, lower alkyl, and substituted lower alkyl and wherein X is O, or S $(-O)_{0-2}$.

26. The composition of claims 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 wherein R_1 is selected from the group consisting of 3-tetrahydrofuranyl, 3-tetrahydrothiofuranyl, 4-pyranyl, and 4 thiopyranyl.

27. The composition of claims 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 wherein R_1 is 3-tetrahydrofuranyl.

28. The composition of claim 1 wherein the compound is selected from the group of compounds consisting of 2-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-(methylthiomethyl)oxolane-3,4-diol; 2-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-[(Ethylthio)methyl]oxolane-3,4-diol; 2-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-[(Methylethylthio)methyl]oxolane-3,4-diol; 2-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-(phenylthiomethyl)oxolane-3,4-diol; 2-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-[(4-Methoxyphenylthio)methyl]oxolane-3,4-diol; 2-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-[(4-chlorophenylthio)methyl]oxolane-3,4-diol; 2-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-[(4-fluorophenylthio)methyl]oxolane-3,4-diol; 2-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-[(4-methylphenylthio)methyl]oxolane-3,4-diol; 2-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-[(4-(trifluoromethyl)phenylthio)methyl]oxolane-3,4-diol; 2-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-[(2-Methoxyphenylthio)methyl]oxolane-3,4-diol; (5-{6-[((3R)oxolan-3-yl)amino]purinyl-9-yl}(2S,3S,4R,5R)-3,4-dihydroxyoxolan-2-yl)(ethylsulfonyl)methane 2-

{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-[(2,4-difluorophenylthio)methyl]oxolane-3,4-diol; 2-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-[(2,6-dichlorophenylthio)methyl]oxolane-3,4-diol; 2-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-[(3-fluorophenylthio)methyl]oxolane-3,4-diol; 2-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-[(2-fluorophenylthio)methyl]oxolane-3,4-diol; 5-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(2S,3R,4R,5R)-4-acetyloxy-2-[(fluorophenylthio)methyl]oxolan-3-yl acetate; Methyl 2[(5-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(2S,3S,4R,5R)-3,4-dihydroxyoxolan-2-yl)methylthio]benzoate; {2[(5-{6-[((3R)oxolan-3-yl)amino]purin-9-yl} (2S,3S,4R,5R)-3,4-dihydroxyoxolan-2-yl) methylthio]phenyl}-N-methylcarboxamidebenzoate; 2-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-(benzoxazol-2-ylthiomethyl)oxolane-3,4-diol; 2-{6-[((3S)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-[(1-methylimidazol-2-yl-thio)methyl]oxolane-3,4-diol; 2-{6-[((3S)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-(pyrimidine-2-ylthiomethyl)oxolane-3,4-diol; 2-{6-[((3S)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-(2-pyridylthiomethyl)oxolane-3,4-diol; 2-{6-[((3S)oxolan-3-yl)amino]purin-9-yl}(4S,5S,2R,3R)-5-(4-pyridylthiomethyl)oxolane-3,4-diol; and 5-{6-[((3R)oxolan-3-yl)amino]purin-9-yl}(2S,3R,4R,5R)-4-acetyloxy-2-[(4-fluorophenylthio)methyl]oxolan-3-yl]acetate.

29. A method for modifying cardiac activity in a mammal experiencing a heart electrical disorder that can be treated by stimulating an A_1 adenosine receptor comprising the administration of a therapeutically effective amount of the composition of claim 1 to the mammal.

30. A method for modifying mammalian adipocyte function by stimulating an A_1 adenosine receptor comprising administering a therapeutically effective amount of the composition of claim 1 to the mammal.

31. A method to restore sensitivity and efficacy of insulin in a mammal by stimulating an A_1 adenosine receptor comprising the administration of a therapeutically effective amount of a composition of claim 1 to the mammal.

32. A method for providing a mammal with central nervous system neuroprotection by stimulating an A_1 adenosine receptor comprising administering a therapeutically effective amount of the composition of claim 1 to the mammal.

33. A method for providing a mammal with cardiomyocyte protection from ischemia by stimulating an A_1 adenosine receptor comprising administering a therapeutically effective amount of the composition of claim 1 to the mammal.

34. The method of claim 29 or 30 or 31 or 32 or 33 wherein the therapeutically effective amount ranges from about 0.01 to about 100 mg/kg weight of the mammal.

35. The method of claim 29 wherein the composition is administered to the mammal experiencing a heart electrical disorder selected from the group consisting of supraventricular tachycardias, atrial fibrillation, atrial flutter, and AV nodal re-entrant tachycardia.

36. The method of claim 30 or 31 wherein the composition is administered to a mammal experiencing a disorder selected from the group consisting of diabetes and obesity.

37. The method of claim 32 wherein the composition is administered to a mammal experiencing an central nervous system disorder selected from the group consisting of epilepsy, and stroke.

38. The method of claim 33 wherein the composition is administered to a mammal experiencing an ischemic event in the heart selected from the group consisting of stable angina, unstable angina, cardiac transplant, and myocardial infarction.

39. The method of claim 29 or 30 or 31 or 32 or 33 wherein the mammal is a human.

40. A pharmaceutical composition of matter comprising the composition of claim 1 and one or more pharmaceutical excipients.

41. The pharmaceutical composition of matter of claim 40 wherein the pharmaceutical composition is in the form of a solution.

42. The pharmaceutical composition of matter of claim 40 wherein the pharmaceutical composition is in the form of a tablet.